



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,011	07/17/2003	Yasushi Kojima	NGW-009 RCE	4612
959	7590	04/26/2007	EXAMINER	
LAHIVE & COCKFIELD, LLP ONE POST OFFICE SQUARE BOSTON, MA 02109-2127			LEE, CYNTHIA K	
			ART UNIT	PAPER NUMBER
			1745	
SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE		
3 MONTHS	04/26/2007	PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.	Applicant(s)	
10/623,011	KOJIMA ET AL.	
Examiner	Art Unit	
Cynthia Lee	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) Responsive to communication(s) filed on 15 February 2007.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-8 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_.

**DETAILED ACTION**

This Office Action is responsive to the amendment filed on 2/15/2006. Claims 7 and 8 have been added. Claims 1-8 are pending. Claims 1 and 4 have been amended. Claims 1-8 are rejected for reasons stated herein below.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation "dynamically" set is not supported by the disclosure as originally filed. The Abstract states that the threshold values are "predetermined" according to the operating state of the fuel cell. Because the limitation "dynamically set" is open to interpretation, it encompasses more than what is supported by the Specification "predetermined."

Applicant is required to cancel the new matter in reply to this Office Action.

***Claim Rejections - 35 USC § 102/103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 1745

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Boehm (US 6461751).

Boehm discloses a method and an apparatus for operating a fuel cell. Boehm discloses a hydrogen sensor that comprises monitoring a cathode exhaust stream downstream of the cathode to detect hydrogen gas concentration (applicant's operating state detecting unit) and decreasing oxidant stoichiometry (applicant's protecting unit) when the hydrogen gas concentration is less than a threshold concentration (applicant's memory unit and abnormal state determining unit). (5:1-20) (applicant's claims 1 and 4). Boehm discloses that the oxidant stoichiometry is preferably controlled by controlling the oxidant stream mass flow rate, for example, by controlling the speed of the mechanical device, such as a compressor, a fan, a pump, or a blower (4:52-55) (applicant's claims 7 and 8).

Boehm also discloses that if the oxidant stream mass flow rate is less than the desired flow rate, the device includes increasing the oxidant flow rate (5:45-52), thus

causing a difference in the supply flow rate of the reaction gases. Boehm's system also comprises decreasing the pressure of the fuel stream when the system detects that the hydrogen gas concentration is increasing (6:33-40), thus causing a difference in the pressure between the reaction gases at the anode and the cathode.

Boehm discloses that when the hydrogen gas concentration is less than a first threshold concentration, the oxidant supply is decreased. Likewise, when the hydrogen gas concentration is higher than a second threshold, the oxidant supply is increased accordingly. This is indicative of actual or potential oxidant starvation (5:5-10). The Examiner notes that Boehm's hydrogen sensor inherently functions "wherein the determination threshold value decreases when a loaded state of the fuel cell decreases" because the hydrogen concentration would naturally increase/decrease as the fuel cell's performance increases/decreases. Thus, the hydrogen threshold concentration would be based on either the first or the second threshold value depending on the current hydrogen concentration. As the loaded fuel cell state decreases, the hydrogen concentration would naturally decrease and would depend on the first threshold concentration should the hydrogen concentration fall below the first threshold concentration.

#### ***Response to Arguments***

Applicant's arguments filed 2/15/2006 have been considered but are not persuasive.

Art Unit: 1745

Applicant argues that that Boehm does not teach nor suggest a determination threshold value which is *dynamically set* according to the operating state of the fuel cell *during operation of the fuel cell* (emphasis in original).

The Examiner notes that Boehm still reads on the claims as amended. The limitation “dynamically set” does not only read on the two threshold values of Boehm but also the threshold value “set” when the fuel cell determines which one of the threshold values it determines abnormality from “during operation.” Absent specific meaning of “set,” it is noted that “set” does not only mean the initial programming of the values. For example, when the oxidant mass flow rate is decreased, the oxidant stoichiometry is decreased. If the hydrogen gas concentration is less than a first threshold concentration, the abnormality of the fuel cell operation is determined from the first threshold value. When the hydrogen gas concentration is increased and exceeds the second threshold concentration, the threshold value is “set” so that abnormality is determined from the first threshold value to the second threshold value. The “setting” of the threshold value is dynamic and occurs during operation of the fuel cell. Further, the “setting” of the threshold value occurs due to the oxidant mass flow rate (or operating state of the fuel cell).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Lee whose telephone number is 571-272-8699. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

Art Unit: 1745

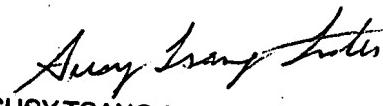
If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ckl

Cynthia Lee

Patent Examiner

  
SUSY TSANG-FOSTER  
PRIMARY EXAMINER